

Temperature and rainfall data for the cotton districts, September, 1885.

Districts.	Rainfall.			Temperature.									Extremes for Sept., 1885.	
	Average for Sept. of three preceding years.	Average for Sept., 1885.	Departures.	Maximum.			Minimum.							
				Mean for Sept. of three preceding years.	Mean for Sept., 1885.	Departures.	Mean for Sept. of three preceding years.	Mean for Sept., 1885.	Departures.					
										Max.	Min.			
	Inch.	Inch.	Inches.	°	°	°	°	°	°	°	°	°	°	
New Orleans...	2.18	5.09	+ 2.91	88.6	85.0	- 3.6	65.8	67.7	+ 1.9	97	50			
Savannah...	3.13	7.49	+ 4.36	87.3	85.4	- 1.9	66.2	66.8	+ 0.6	98	53			
Charleston...	4.88	3.76	- 1.12	84.9	82.4	- 2.5	64.0	66.0	+ 2.0	95	43			
Atlanta...	1.86	0.68	- 1.18	84.4	80.8	- 3.6	62.4	63.6	+ 1.2	94	44			
Wilmington...	5.39	2.99	- 2.40	82.4	81.3	- 1.1	62.0	60.5	- 1.5	94	29			
Memphis...	1.66	4.24	+ 2.58	85.4	82.9	- 2.5	60.3	61.8	+ 1.5	97	38			
Galveston...	3.04	5.26	+ 2.22	87.8	87.4	- 0.4	65.0	67.3	+ 2.3	100	38			
Vicksburg...	1.86	0.56	- 1.30	88.3	83.4	- 4.9	63.4	66.1	+ 2.7	93	46			
Montgomery...	1.37	4.19	+ 2.82	86.9	83.5	- 3.4	62.9	64.9	+ 2.0	97	38			
Augusta...	2.76	4.09	+ 1.33	85.5	82.6	- 2.9	64.0	68.7	+ 4.7	96	47			
Little Rock...	1.97	1.91	- 0.06	86.5	84.9	- 1.6	58.5	62.2	+ 3.7	100	37			
Mobile...	0.83	5.49	+ 4.66	89.3	85.6	- 3.7	63.9	68.1	+ 4.2	98	46			

The rainfall, as will be seen from the above table, was excessive in all districts, with the exception of those of Charleston and Little Rock, where, in the former, it was deficient, and in the latter, about normal. In the districts of Atlanta, Mobile, Savannah, and Vicksburg, the excess amounted to more than four inches.

While the means of the maximum temperatures were in all districts lower than the average, the minimum temperatures are, in all districts, except that of Wilmington, higher than the average.

TEMPERATURE OF WATER.

The following table shows the highest and lowest temperatures of water observed at the several stations; the monthly ranges of water temperature; the average depth at which the observations were made; and the mean temperature of the air:

Temperature of water for September, 1885.

Station.	Temperature at bottom.		Range.	Average depth, feet and tenths.	Mean temperature of the air at station.
	Min.	Max.			
Atlantic City, New Jersey	74.1	64.0	10.1	9.1	64.7
Alpena, Michigan	60.5	53.8	6.7	12.8	55.4
Augusta, Georgia	84.1	69.3	14.8	7.8	73.8
Baltimore, Maryland	77.0	68.5	8.5	10.3	66.9
Block Island, Rhode Island	64.7	56.1	8.6	7.6	61.4
Boston, Massachusetts	62.2	55.1	7.1	19.2	59.6
Buffalo, New York	67.3	57.6	9.7	9.5	60.0
Canby, Fort, Washington Territory	61.9	59.1	2.8	16.7	58.5
Cedar Keys, Florida	88.2	79.1	9.1	8.7	79.9
Charleston, South Carolina	80.8	74.3	6.5	17.5	76.4
Chicago, Illinois	77.8	57.6	20.2	8.8	63.9
Chicoctee, Virginia	77.6	67.2	10.4	3.7	67.3
Cleveland, Ohio	68.9	61.9	7.0	14.0	61.5
Detroit, Michigan	65.8	60.0	5.8	26.3	62.7
Duluth, Minnesota	58.7	47.3	11.4	10.5	53.9
Eastport, Maine	51.8	50.0	1.8	16.8	54.4
Escanaba, Michigan	60.3	54.0	6.3	18.3	55.3
Galveston, Texas	86.8	76.6	10.2	13.2	79.9
Grand Haven, Michigan	67.6	60.9	6.7	19.0	59.6
Indianola, Texas	85.9	77.0	8.9	9.2	79.5
Jacksonville, Florida	88.0	77.8	10.2	18.0	78.3
Key West, Florida	89.9	84.2	5.7	17.6	84.0
Mackinaw City, Michigan	59.0	53.8	5.2	10.0	55.6
Macon, Port, North Carolina	82.0	72.6	9.4	13.4	72.6
Marquette, Michigan	54.7	52.9	1.8	12.4	55.5
Milwaukee, Wisconsin	61.7	50.7	11.0	8.0	60.0
Mobile, Alabama	83.8	77.5	6.3	16.0	76.6
New Haven, Connecticut	69.7	61.5	8.2	16.9	60.7
New London, Connecticut	67.2	61.2	6.0	11.6	61.0
New York City	77.0	63.2	13.8	18.3	64.1
Norfolk, Virginia	77.0	67.1	9.9	16.2	70.0
Pensacola, Florida	85.0	78.4	6.6	17.4	78.3
Portland, Maine	57.7	52.3	5.4	10.7	57.0
Portland, Oregon	67.7	62.9	4.8	49.5	62.2
Sandusky, Ohio	70.0	61.8	8.2	11.7	63.4
Sandy Hook, New Jersey	74.1	67.7	6.4	2.3	64.7
San Francisco, California	61.1	58.1	3.0	37.7	60.7
Savannah, Georgia	81.8	71.6	10.2	11.2	76.0
Smithville, North Carolina	79.5	70.3	9.2	11.1	74.0
Toledo, Ohio	68.4	63.2	5.2	13.7	63.0
Wilmington, North Carolina	84.2	67.2	17.0	14.8	73.1

* Record for last four days of the month.

WINDS.

The most frequent directions of the wind during September, 1885, at Signal Service stations, are shown on chart ii by arrows

flying with the wind; they are also given in the table of miscellaneous meteorological data. In New England, the Lake region, upper Mississippi, Missouri, and Ohio valleys, the prevailing directions were mostly southerly; on the middle and south Atlantic coasts and in the Gulf States, they were mostly northeasterly; on the Pacific coast, they were generally from the west; in the Rocky Mountain districts they were variable.

HIGH WINDS.

[In miles per hour.]

On the summit of Mount Washington, New Hampshire, wind-velocities of fifty or more miles per hour occurred on the following dates: 1st to 6th, 8th, 9th, 13th to 19th, 22d, 23d, 24th, the highest velocities being 90, nw., 23d (maximum for month); 85, w., 4th; 80, nw., 16th.

Other stations registering wind-velocities of fifty miles or more per hour are as follows:

Dodge City, Kansas, 51, nw., 7th.
Fort Assinaboine, Montana, 51, sw., 9th.
Valentine, Nebraska, 54, n., 11th.
Fort Shaw, Montana, 68, sw., 13th.
Pike's Peak, Colorado, 52, nw., 13th.
Indianola, Texas, 60, ne., 19th.
Fort Macon, North Carolina, 52, se., 21st.
Kitty Hawk, North Carolina, 56, n., 22d.
Sandy Hook, New Jersey, 53, nw., 23d.
Cape Henry, Virginia, 51, nw., 23d.
Cape May, New Jersey, 56, nw., 23d.

LOCAL STORMS AND TORNADOES.

Dodge City, Kansas: a violent northwesterly gale occurred at this place at about 6 p. m. on the 7th. The wind, for a few minutes, blew at the rate of sixty miles per hour.

Maybee, Monroe county, Michigan: at 5.45 p. m. on the 8th a violent storm occurred at this place, destroying several buildings.

Cambridge City, Wayne county, Indiana: at about 5.30 p. m. on the 8th this place was visited by a destructive storm. Several dwellings and out-buildings in this vicinity were unroofed or otherwise damaged.

Lancaster, Fairfield county, Ohio: numerous dwellings were destroyed in this county by a violent storm on the 8th. Orchards and crops were also destroyed, and considerable stock killed.

Napoleon, Henry county, Ohio: at about 5 p. m. on the 8th a severe wind storm prevailed in this vicinity. Several dwellings and barns in the surrounding country were blown down. The track of the storm was about one-half mile in width; it appears to have spent its violence north of this place.

Portsmouth, Scioto county, Ohio: at 4.50 p. m. on the 8th a tornado passed, in a northerly direction, over this place, unroofing a few buildings and blowing down many chimneys, trees, etc., its path being about two hundred yards in width. The tornado approached the city from the south, coming over a hill about six hundred feet in height on the opposite side of the river. It was of only a few seconds' duration, and was accompanied by a roaring sound. A revolving motion of the cloud, from east to west, was observed during its passage. The observer states that the hill mentioned probably afforded the city great protection from the violence of the tornado.

Garrettsville, Portage county, Ohio: a violent storm occurred three miles southeast of station on the 8th. Much damage was done to orchards, forests, and farm buildings.

Jacksonborough, Butler county, Ohio: the storm of the 8th caused considerable damage; buildings were unroofed, and the tobacco in many places was totally destroyed.

Circleville, Pickaway county, Ohio: during the night of the 8-9th a destructive storm passed through this county from the western to the northeastern boundary. Its path was about one hundred yards wide; it was not continuous, and in places no evidences of the storm are apparent. A number of dwellings and out-buildings were demolished.

Urbana, Champaign county, Ohio: a severe wind and rain

storm passed through the southern and eastern portions of this county during the night of the 8-9th. At Terre Haute, and in that vicinity, the smaller out-buildings, and nearly all fencing, were destroyed, and the growing crops badly damaged.

Bucyrus, Crawford county, Ohio: a destructive tornado occurred in this vicinity during the night of the 8-9th. Its course was in a northeasterly direction, and dwellings, barns, orchards, etc., in its path were destroyed. The damage in this county is estimated at \$50,000. At Galion and Osceola the storm was especially severe.

Caldwell, Noble county, Ohio: a violent wind and rain storm occurred at this place during the night of the 8-9th, causing great damage to the corn crop, orchards, and shade trees.

Washington Court House, Fayette county, Ohio: at about 8 p. m. on the 8th this place was almost totally destroyed by a tornado. Of forty business establishments fronting Central square, not one escaped destruction; besides these, about two hundred residences were demolished. Six persons were killed, and more than one hundred were more or less seriously injured. Washington Court House is the county seat of Fayette county. Being the centre of a rich agricultural district, with excellent railroad facilities, it has, during the last fifteen years, grown to be a business place of considerable importance. Its residents had beautified the town with tasteful dwellings, and its recently completed court house was one of the best in the state. The damage caused by the tornado is variously estimated, but it is generally considered that it will be about \$500,000.

Chambersburg, Franklin county, Pennsylvania: a severe storm passed over this place on the 9th. At Mount Alto, ten miles east, trees were uprooted or twisted off. The storm seems to have spent its force in the vicinity of Mount Alto.

Kansas City, Missouri: reports from Rich Hill, Bates county, state that a severe storm prevailed at that place during the night of the 8-9th, causing damage estimated at several thousand dollars. A brick dwelling was partly demolished and numerous out-buildings were destroyed.

Fort Reno, Indian Territory: at 1.10 a. m. on the 13th a dark, cone-shaped tornado-cloud was observed approaching this place from the northwest, the smaller end being downward and apparently within seventy-five feet of the earth. When within one mile of the station the course of the cloud changed to the eastward and it passed within one-half mile of the post. The cloud did not descend to the ground; it was preceded and accompanied by a loud, roaring sound.

Lead Hill, Boone county, Arkansas: reports from Mountain Home, Baxter county, state that during the morning of the 13th a violent storm occurred at that place. Trees were uprooted, houses unroofed, and roadways obstructed. A severe storm is also reported to have occurred on the above date at Vanndale, Cross county, causing considerable damage.

Astoria, Oregon: at about 3 p. m. on the 15th a whirlwind passed in a westerly direction near this place, twisting off small trees and carrying them into the air. At Skipanon, a few miles west of Astoria, the whirlwind left quite a marked path through the small timber. In Upper Astoria a man was injured by the falling timbers of a house which was blown down.

The following are reports of tornadoes which occurred during September, 1885, forwarded by special tornado observers, of whom there are more than 1,400.

Tippecanoe City, Miami county, Ohio: at 7 p. m., local time, on the 8th a tornado passed north of this place to a point seven miles north of Springfield, Clarke county. In its path three dwellings, a school-house, four barns, and other out-buildings were destroyed; one person was killed and five injured.

Hiram, Portage county, Ohio: at 10.15 p. m. on the 8th a tornado occurred at a point about eight miles southeast of this place. The cloud was funnel-shaped and moved in a north-northeasterly direction, its path being one and one-fourth miles long and three hundred and thirty feet in width.

Upper Sandusky, Wyandot county, Ohio: a tornado oc-

curred here at about 7 p. m. on the 8th. The cloud was funnel-shaped and moved in a northeasterly direction, its path being 1,320 feet in width. A large church, a residence (both brick structures), and a barn were destroyed.

Washington Court House, Fayette county, Ohio: at 7.30 p. m., local time, on the 8th a violent and destructive tornado occurred at this place. The tornado-cloud moved in an east-northeasterly direction, its path being about two hundred and fifty feet in width. It was about ten seconds in passing a given point. Three hundred buildings were destroyed, or badly injured. These included many business houses, four railroad depots, three churches, and the gas-works. The losses sustained are estimated at \$500,000. About one hundred persons were injured and six killed. (See report above.)

At 5 p. m., standard time, on the 8th a tornado passed from a point in the northeastern part of Hillsdale county, Michigan, to Ridgeway, Lenawee county, a distance of thirty miles, its path being from two hundred to six hundred and sixty feet in width. About fifteen buildings were destroyed, three persons injured, and much stock killed. The damage is estimated at \$30,000.

Komstad, Clay county, Dakota: a tornado occurred at this place at 8 p. m. on the 11th. There were two funnel-shaped clouds which moved in an east-southeasterly direction. Numerous out-buildings were destroyed and five persons injured.

Ord, Valley county, Nebraska: a tornado occurred at this place at 10.15 p. m. on the 11th. Its course was north-north-westerly for a distance of ten miles, the path being about six hundred and sixty feet in width. Numerous buildings were destroyed and two persons killed.

Yankton, Dakota: a tornado occurred near this place on the 11th. It moved in an easterly direction for a distance of ten miles, causing no damage, as the tornado-cloud did not extend to the earth.

Captain Samuel Hess, commanding the s. s. "Philadelphia," furnishes the following description of a tornado which occurred September 4th at Puerto Cabello, State of Carabobo, Venezuela:

September 4th, 4.32 p. m. (Greenwich mean time): A tornado, or, as the natives term it, a "caldaretta," beginning at south and ending at west, occurred at the above time; it lasted one hour, and the barometer fell during the storm 0.10 inch; terrific thunder and lightning, accompanied by heavy rain. Some slight damage was done to the vessels in port by breaking adrift from their moorings. One seaman, belonging to one of the small traders, was killed by lightning. The palm trees in the park at the entrance of the port were stripped of their foliage, and many were torn up by the roots. The path of the storm was about three hundred yards wide. The difference between the wet and dry-bulb thermometers was 1° 5.

NAVIGATION.

FLOODS.

Rio Grande City, Texas: the Rio Grande River rose rapidly on the 2d and overflowed during the night.

Leavenworth, Kansas, 7th: it has rained almost daily during the past week, the aggregate precipitation amounting to about 6.50 inches. All streams are much swollen, and many fields of low land are flooded.

Parsons, Labette county, Kansas: a very heavy rainfall occurred here during the night of the 7-8th. The creeks in this vicinity overflowed and the lowlands were flooded. This town was entirely surrounded by water, and many people living in the suburbs near Labette Creek were compelled to move out of their dwellings.

Escanaba, Michigan: the heavy rains of the 8th caused washouts on the Chicago and Northwestern railroad near Fort Howard, Wisconsin. Between that place and Duck Creek the water covered the track to a depth of four feet.

Lamar, Missouri: a remarkably heavy rainfall occurred at this place on the 8th. During the eight hours ending at 3 p. m. the rainfall amounted to more than six inches. Creeks and streams overflowed, and the crops in the surrounding country were much damaged.

Milwaukee, Wisconsin: the heavy rains of the 8th and 9th,